Chip Bead Cores

Type: **EXCCL**
EXCML
EXC3B

■ Features

- Effective noise suppression for Power lines and high speed signal lines.
- Easy pattern layout on PC Board.
- Available for flow soldering and reflow soldering.

Type: EXCCL, EXCML

- Low DC Resistance (3 to 8 mΩ) typical Rated current (3 and 4 Amperes)
- Low impedance

Type: EXC3B

- High impedance for high speed signal line noise
- Increased attenuation
- 60 Ω-1 A, 120 Ω-0.5 A are achieved by using 1608 size. (type: EXC3BP)

■ Recommended Applications

- Digital equipment such as Personal Computers, Word Processors, Printers, HDD, PCC, CD-ROM, DVD-ROM
- Digital audio and video equipment such as VCR, DVC, CD Player, DVD Player
- AC adapters, and Switching Power supplies
- Electronic automate equipment such as Engine control, Panel and Audio systems
- Electric musical instruments and other digital devices

■ Type: EXCCL

- Explanation of Part Numbers

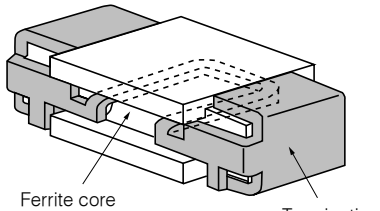
1	2	3	4	5	6	7	8	9	10	11	12
E	X	C	C	L	3	2	1	6	U	1	
Product Code			Type	Part kind	Size				Form	Suffix	

Product Code	Type	Part kind
Noise Filter	Chip type	Bead core

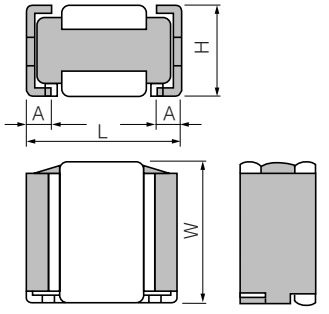
Code	Dimensions (mm)
4532	4.5x3.2x1.8
3225	3.2x2.5x1.6
3216	3.2x1.6x1.6

Code	Packing
U	Embossed Taping

■ Construction



■ Dimensions in mm (not to scale)



(mm)

	4523	3225	3216
L	4.5±0.4	3.2±0.3	3.2±0.3
W	3.2±0.3	2.5±0.3	1.6±0.3
H	1.8±0.2	1.6±0.3	1.6±0.3
A	0.5±0.2	0.5±0.3	0.5±0.3

■ Type: EXCML

● Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	X	C	M	L	2	0	A	3	9	0	U
Product Code			Type	Part kind	Size		Material	Nominal Impedance			Form

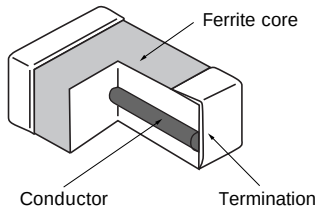
- Product Code: Noise Filter
- Type: Multilayer Chip type
- Part kind: Bead core
- Size:

Code	Dimensions (mm)
45	4.5x1.6 x1.1
32	3.2x1.6 x0.9
20	2.0x1.25x0.9
16	1.6x0.8 x0.8

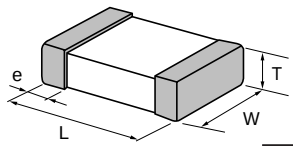
- Nominal Impedance: The first two digits are significant figure of impedance value and the third one denotes the number of zeroes following
- Form:

Code	Packing
U	Embossed Taping (EXCML16 to 32)
H	Embossed Taping (EXCML45)

■ Construction



■ Dimensions in mm (not to scale)



(mm)

Type	L	W	T	e
EXCML16	1.6±0.2	0.8±0.2	0.8±0.2	(0.4)
EXCML20	2.0±0.2	1.25±0.20	0.9±0.2	(0.5)
EXCML32	3.2±0.3	1.6±0.3	0.9±0.2	(0.6)
EXCML45	4.5±0.3	1.6±0.3	1.1±0.2	(0.6)

■ Type: EXC3B

● Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	X	C	3	B	B	2	2	1	H		
Product Code			Size	Type	Characteristics	Nominal Impedance			Form	Suffix	

- Product Code: Noise Filter
- Size:

Code	Dimensions (mm)
3	1.6x0.8x0.8

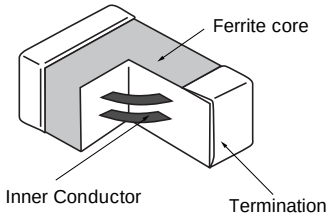
- Type: Multilayer Chip type Bead Core
- Characteristics:

B	High frequency High attenuation for signal Line
P	High frequency High attenuation for Power Line

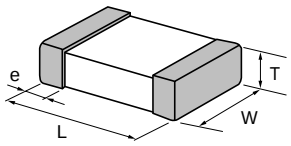
- Nominal Impedance: The first two digits are significant figure of impedance value and the third one denotes the number of zeroes following
- Form:

Code	Packing
H	Embossed Taping

■ Construction



■ Dimensions in mm (not to scale)



(mm)

Type	L	W	T	e
EXC3BB	1.6±0.2	0.8±0.2	0.8±0.2	0.30±0.15
EXC3BP	1.6±0.2	0.8±0.2	0.8±0.2	0.30±0.15

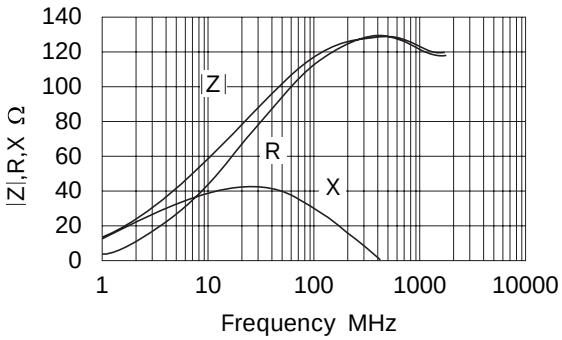
■ Ratings

Type	Part Number	Impedance		Rated Current	DC Resistance
		(Ω) at 100 MHz	tol.(%)	(mA DC)	(Ω) max.
4532	EXCCL4532U1	115	±25	2000	0.1
3225	EXCCL3225U1	45		2000	0.05
3216	EXCCL3216U1	25		2000	0.05
4516	EXCML45A910H	91		3000	0.016
3216	EXCML32A680U	68		3000	0.012
2012	EXCML20A390U	39		4000	0.008
1608	EXCML16A270U	27		4000	0.006
1608	EXC3BP600H	60		1000	0.07
	EXC3BP121H	120		500	0.1
	EXC3BB221H	220		200	0.3
	EXC3BB601H	600		100	0.8
	EXC3BB102H	1000		50	1

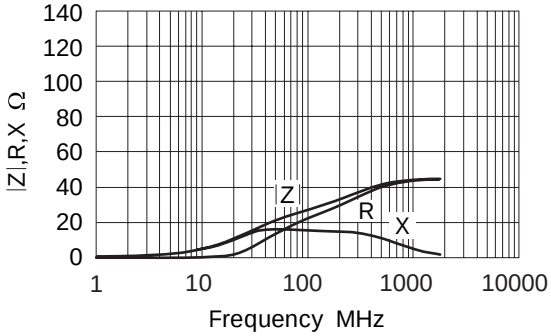
■ Impedance Characteristics (Reference Data) Measured by HP4291A

|Z| : Impedance R : Resistance X : Reactance

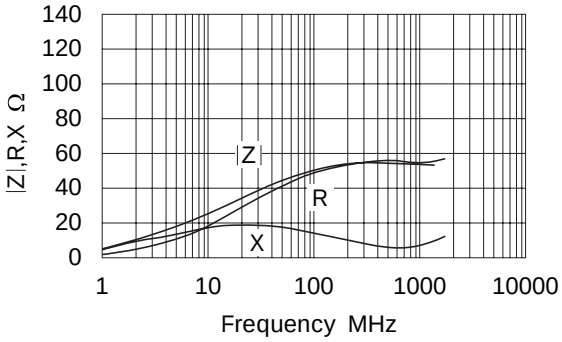
EXCCL4532U1 (4532)



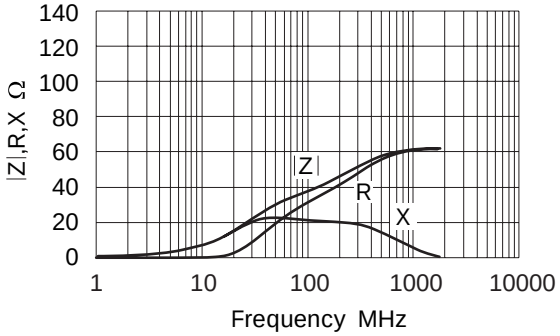
EXCML16A270U (1608)



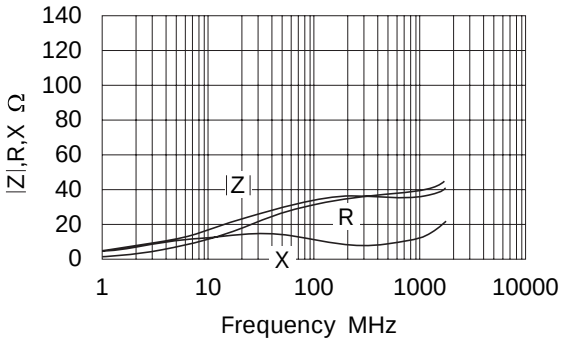
EXCCL3225U1 (3225)



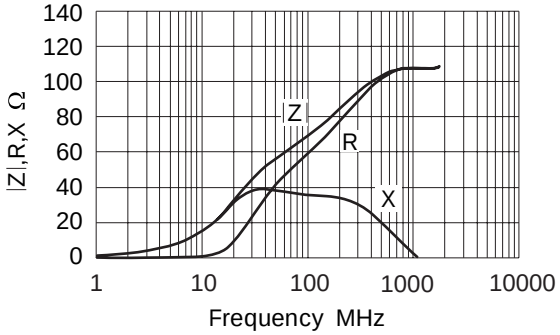
EXCML20A390U (2012)



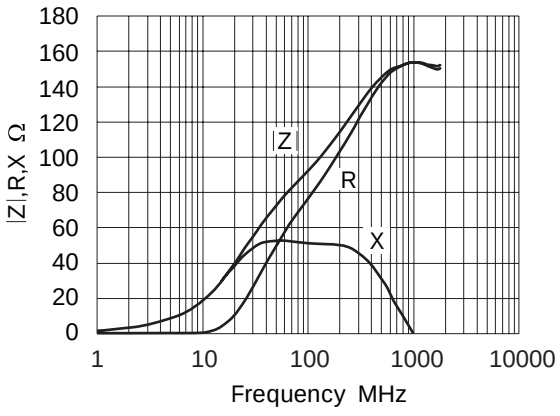
EXCCL3216U1 (3216)



EXCML32A680U (3216)



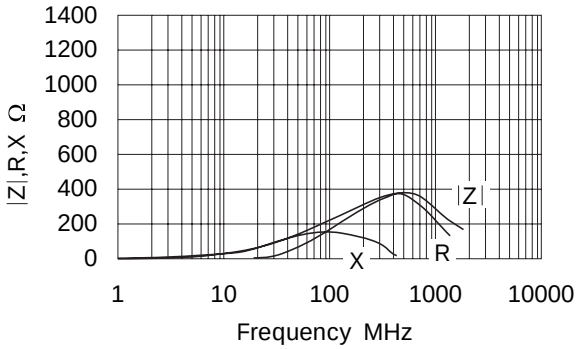
EXCML45A910H (4516)



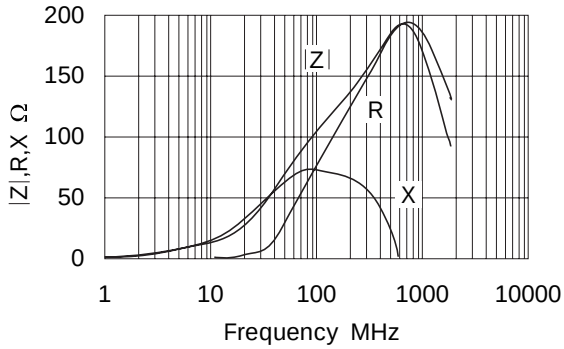
■ Impedance Characteristics (Reference Data) Measured by HP4291A

|Z| : Impedance R : Resistance X : Reactance

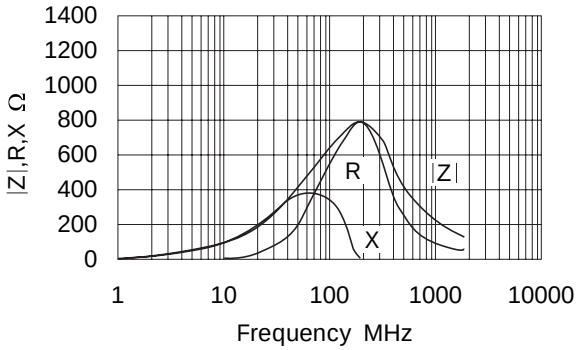
EXC3BB221H (1608)



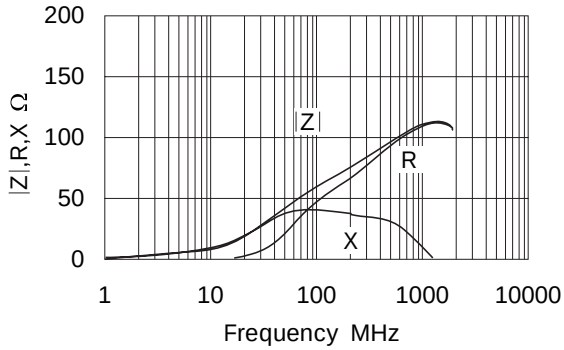
EXC3BP121H (1608)



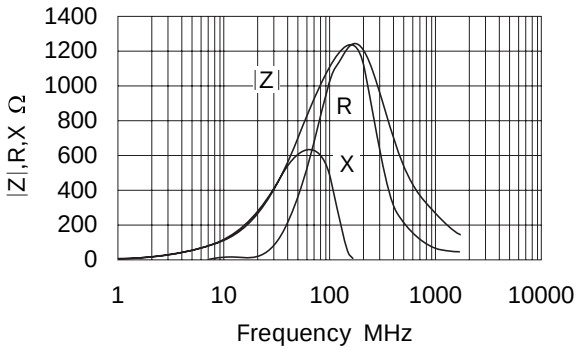
EXC3BB601H (1608)



EXC3BP600H (1608)



EXC3BB102H (1608)

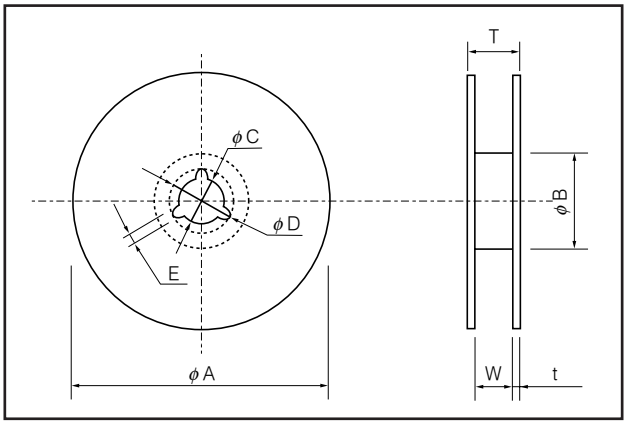


■ Packaging Specifications

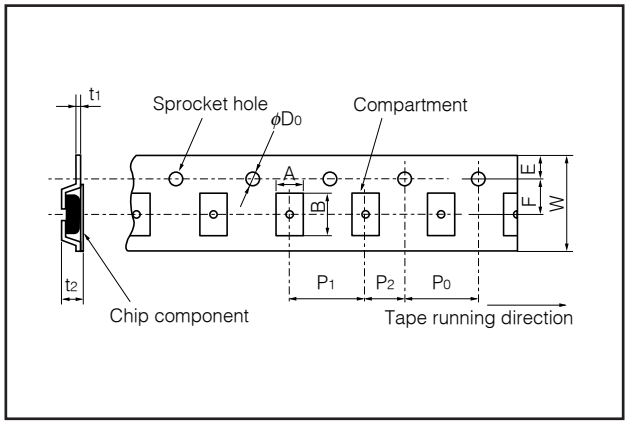
● Standard Quantity

Part Number	Embossed Taping	Weight (mg/pc.) Reference Data
EXCCL4532U1	1000 pcs./reel	125.8
EXCCL3225U1	2000 pcs./reel	60.5
EXCCL3216U1	2000 pcs./reel	37
EXCML45A910H	3000 pcs./reel	36.0
EXCML32A680U	3000 pcs./reel	21.5
EXCML20A390U	4000 pcs./reel	10.5
EXCML16A270U	4000 pcs./reel	4.5
EXC3B□□□□H	4000 pcs./reel	4.5

● Standard Reel Dimensions in mm



● Embossed Carrier Dimensions in mm (not to scale)



Standard Reel Dimensions (mm)

Part Number	φA	φB	φC	φD	E	W	T	t
EXCCL4532U1	180.0 $^{0}_{-3.0}$	60.0±1.0	13.0±0.5	21.0±0.8	2.0±0.5	13.0 $^{+0.5}_{-1.0}$	16.5 max.	1.2±0.5
EXCCL3225U1						9.5 $^{+0.5}_{-1.0}$	13 max.	
EXCCL3216U1								
EXCML45A910H						13.0 $^{+0.5}_{-1.0}$	16.5 max.	
EXCML32A680U						9.5 $^{+0.5}_{-1.0}$	13 max.	
EXCML20A390U								
EXCML16A270U								
EXC3B□□□□H								

Embossed Carrier Dimensions (mm)

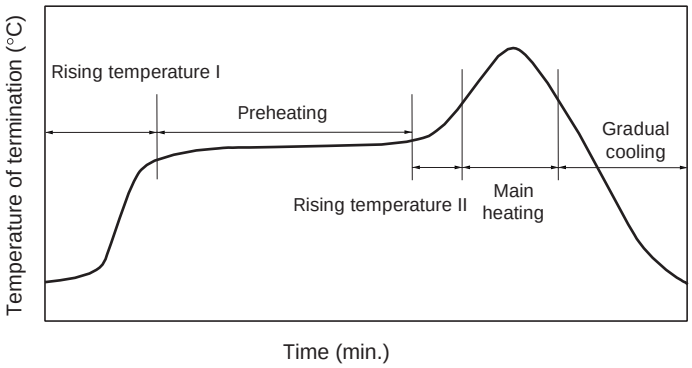
Part Number	A	B	W	F	E	P_1	P_2	P_0	ϕD_0	t_1	t_2
EXCCL4532U1	3.6±0.2	4.9±0.2	12.0±0.2	5.5±0.1	1.75±0.10	8.0±0.1	2.0±0.1	4.0±0.1	1.5±0.1	0.20±0.05	2.4 max.
EXCCL3225U1	2.9±0.2	3.6±0.2	8.0±0.2	3.5±0.1		4.0±0.1					2.1 max.
EXCCL3216U1	2.0±0.2	3.6±0.2									
EXCML45A910H	1.9±0.2	4.8±0.2	12.0±0.2	5.5±0.1							1.8 max.
EXCML32A680U	1.9±0.2	3.5±0.2	8.0±0.2	3.5±0.1							1.6 max.
EXCML20A390U	1.5±0.2	2.3±0.2									
EXCML16A270U	1.1±0.2	2.1±0.2									
EXC3B□□□□H	1.0±0.1	1.8±0.1								0.25±0.05	

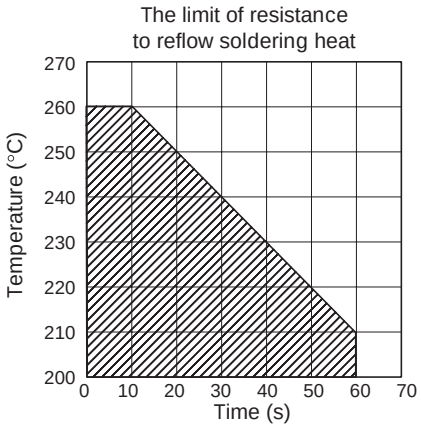
■ Soldering Conditions

Precautions and recommendations are described below.

● Please contact us for additional information when used in conditions other than those specified. Please measure the temperature of the terminals and evaluate solderability of every type of solder and printed circuit board before actual use.

<Recommended reflow soldering temperature>

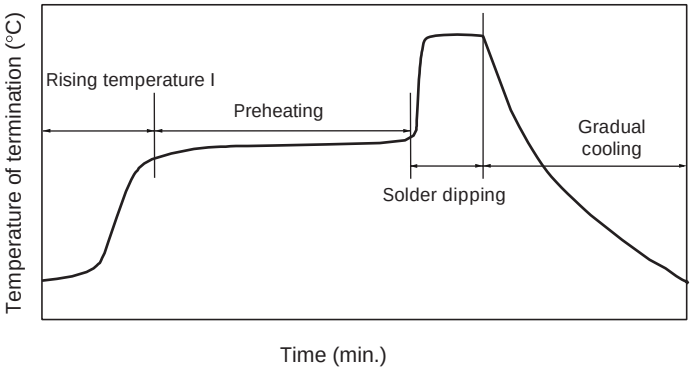


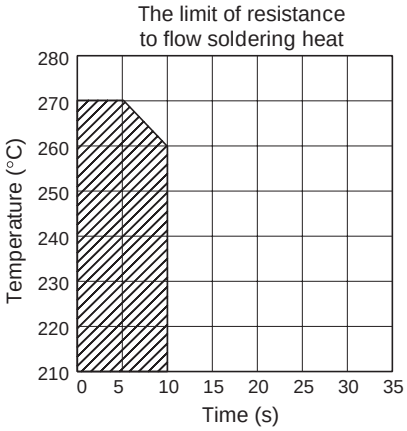


Solder	Rising temperature I	Preheating	Rising temperature II	Main heating	Gradual cooling
For solder (Sn-37Pb)	The normal time for preheating 30 s to 60 s	140 °C to 160 °C 60 s to 120 s	Preheating to 200 °C 20 s to 40 s	235±10 °C Peak	200 °C to 100 °C 1 °C to 4 °C/s
For lead-free solder (Sn-3Ag-0.5Cu)	The normal time for preheating 30 s to 60 s	150 °C to 170 °C 60 s to 120 s	Preheating to 210 °C 20 s to 40 s	250^{+10}_{-5} °C Peak	210 °C to 100 °C 1 °C to 4 °C/s

✻ Reflow soldering should be a maximum of two times.

<Recommended flow soldering temperature>





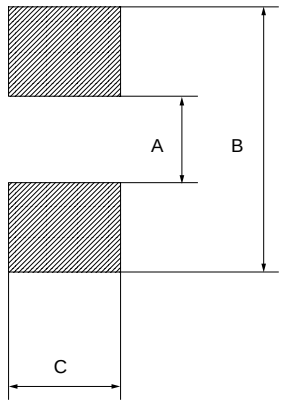
Solder	Rising temperature I	Preheating	Solder dipping	Gradual cooling
For SnPb eutectic (Sn-37Pb)	The normal time for preheating 30 s to 60 s	100 °C to 160 °C 60 s to 120 s	240±10 °C max. 5 s	Solder to 100 °C dipping 1 °C to 4 °C/s
For SnAgCu lead-free (Sn-3Ag-0.5Cu)	The normal time for preheating 30 s to 60 s	100 °C to 160 °C 60 s to 120 s	255±10 °C max. 5 s	Solder to 100 °C dipping 1 °C to 4 °C/s

<Repair with hand soldering>

● Use a soldering iron with tip temperature of 280 °C or less. Solder for 3 seconds or less for each termination.

■ Recommended Land Pattern Dimensions in mm (not to scale)

(mm)



Part Number	Flow/Reflow	A	B	C
EXCCL4532U1	Flow, Reflow	3	5.4	2.8
EXCCL3225U1		1.7	4.1	2.1
EXCCL3216U1		1.7	4.1	1.2
EXCML45A910H		2.6 to 3	5.5 to 6.5	1.2 to 1.6
EXCML32A680U		1.6 to 2	4 to 5	1.2 to 1.6
EXCML20A390U		0.8 to 1.2	3 to 4	1 to 1.2
EXCML16A270U		0.6 to 1	2 to 3	0.8 to 1
EXC3B	Flow	0.8 to 1	2.4 to 3	0.6 to 0.8
	Reflow	0.8 to 1	2 to 2.6	0.8 to 1

⚠Safety Precautions

1. Flux: Use rosin type or non-halogen type flux.
2. Cleaning agent: Use alcohol based solvent only. Consult us before using any other type of cleaning agent.
3. Excessive mechanical stress may damage the components. Handle with care.
4. Store under temperature –5 °C to +40 °C and relative humidity 40 % to 60 %. Avoid rapid changes of temperature and humidity.
5. Use the components within one year after date of inspection for shipment.(EXC3B : within half a year)
6. Before ordering, test the components in your application to ensure proper function and compatibility.